AGENDA #1

Water and Wastewater Financing Board

December 3, 2015
9:15 am
Room 31, Legislative Plaza
301 Sixth Avenue North
(6th Avenue between Charlotte Avenue and Union Street)
Nashville, Tennessee

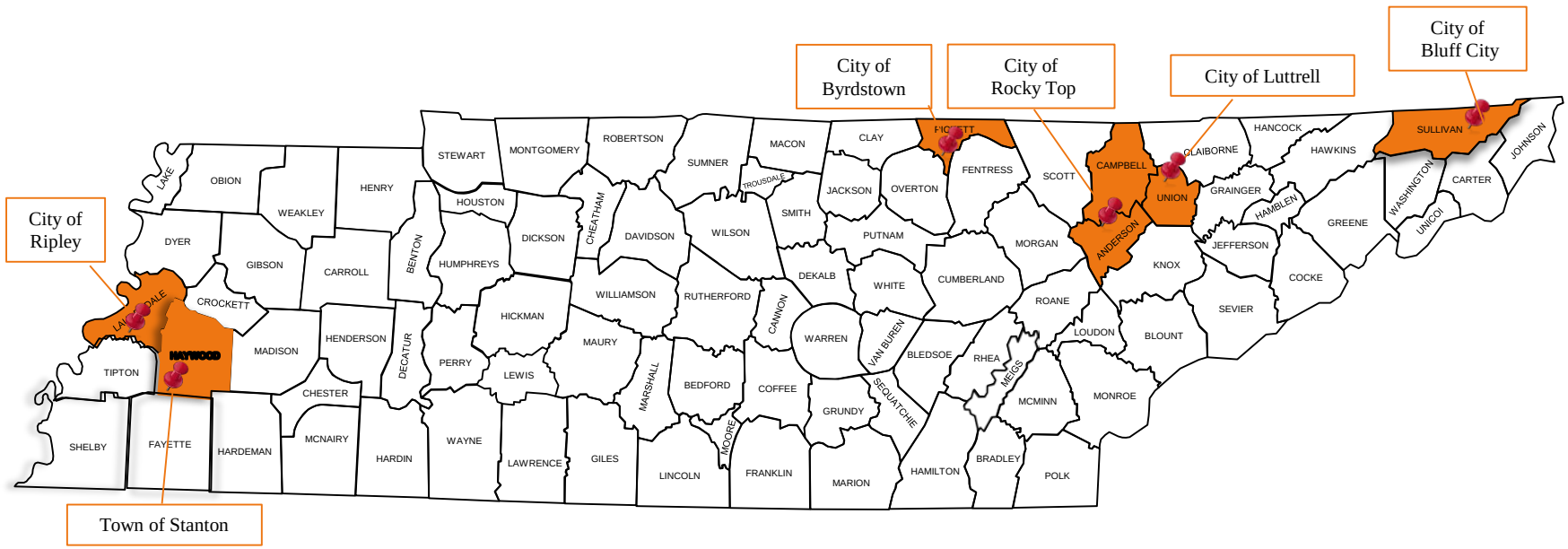
Call to Order			
Approval of Minutes		September 10, 2015	Pg. 3
Cases – Financial Distress	City of Luttrell	Union County	Pg.9
	City of Rocky Top	Anderson/Campbell County	Pg.11
Status – Financial Distress	City of Bluff City	Sullivan County	Pg,14
	Town of Stanton	Haywood County	Pg.17
Cases – Water loss:	City of Ripley	Lauderdale County	Pg.20
Status – Water loss:	Town of Byrdstown	Pickett County	Pg.33
Miscellaneous:	Approval of Rules		Pg.39
	Compliance list		Pg. 40
	Jurisdiction List		Pg. 41
	Proposed 2016 Meeting Schedule		Pg. 43
Open Discussion			

Visitors to the Legislative Plaza are required to pass through a metal detector and must present photo identification. Individuals with disabilities who wish to participate in this meeting or to review filings should contact the Office of State and Local Finance to discuss any auxiliary aids or services need to facilitate such participation. Such contact may be in person or by writing, telephone or other means, and should be made prior to the scheduled meeting date to allow time to provide such aid or service. Contact the Office of State and Local Finance (Mr. John Greer) for further information.

505 Deaderick Street, Suite 1500
James K. Polk State Office Building
Nashville, TN 37243-1402
Telephone (615) 401-7879
Fax (615) 741-6216
John.Greer@cot.tn.gov

WWFB

December 3, 2015



Minutes

September 10, 2015

MINUTES
of the
WATER AND WASTEWATER FINANCING BOARD MEETING
September 10, 2015
10:00 a.m.

Chair Ann Butterworth detected a quorum and called to order the meeting of the Water and Wastewater Financing Board (Board) in Legislative Plaza, Room 31, in Nashville, Tennessee.

Board members present and constituting a quorum:
Ann Butterworth, Chair, Comptroller Designee
Tom Moss, Department of Environment and Conservation (TDEC), Commissioner Designee
Mechele Williams, Representing Government Finance
Randy Wilkins, Representing Utility Districts
Kenneth Wiggins, Active Employee of a Municipal Water System
Drexel Heidel, Active Employee of a Water Utility District
Ben Bolton, Representing Manufacturing Interests
Tamika Parker, Representing Environmental Interests

Board Members Absent:
VACANT, Representing Municipalities

Staff present:
Joyce Welborn, Comptroller's Office
John Greer, Comptroller's Office

Counsel present:
Betsy Knotts, Comptroller's Office

Ms. Butterworth asked that all members and staff introduce themselves. It was noted that Mr. Bolton would be resigning immediately following the meeting due to his acceptance of a position with TDEC. Ms. Welborn announced her retirement, effective December 21, 2015.

Ms. Butterworth proposed amending the agenda to include the review the updated depreciation schedule provided by the Division of Local Government Audit in the Comptroller's office. With no objection, the agenda was amended.

Approval of Minutes:
Ms. Williams moved approval of the minutes of May 14, 2015. Mr. Moss seconded the motion, which was approved unanimously.

Conflict of Interest:
Ms. Williams recused herself from all discussion and any vote dealing with Brownsville Energy Authority. Brownsville Energy Authority owns approximately 14% of Tennergy Corporation, Ms. Williams's employer.

Cases – Financial distress

City of Covington
The City of Covington has been reported to the Board as having two consecutive years with a negative change in net position in its sewer system as of June 30, 2014. Effective August 2014, the City raised sewer rates by 4%. Also, the City voted to automatically adjust rates annually on July 1st based on a consumer price index of their choice.

Mr. Moss moved to endorse the actions of the City of Covington. Mr. Wiggins seconded the motion, which carried unanimously.

Status reports – Financial Distress
Mr. Greer explained that status reports are presented simply to update the Board on certain matters specific to the entities involved. No action is taken unless specified by members. The entities will continue to be monitored by the Board until compliance is reached. Mr. Greer presented the following cases:

The Town of Englewood
The Town of Englewood has been reported to the Board as having five consecutive years with a negative change in net position as of June 30, 2014. The Town is currently going through a complete rehabilitation of the water plant. The Board took no action.

City of Friendship
The City of Friendship has been reported to the Water and Wastewater Financing Board as being financially distressed based on a negative change in net position for a minimum of eleven consecutive years in its water system. In February 2014 and February 2015, the City raised water rates by 15%. The City is projecting a net positive change in net position for the fiscal year ending June 30, 2015. The Board took no action.

City of Westmoreland
At the May 14, 2015 meeting, the Board voted to endorse the actions of the City, if the Council unanimously passed the plan submitted by the Mayor. The Board received notice that the plan submitted by the Mayor was approved unanimously by the City Council. The Board took no further action.

Cases – Water loss
Mr. Greer explained that water loss cases are simply presented, but no action is taken unless specifically requested by individual members. The cases will continue to be reviewed annually until they are in compliance. Mr. Greer presented the following cases:

Brownsville Energy Authority

Brownsville Energy Authority was reported to the Board as having a low validity score of 67. As noted previously, Ms. Williams recused herself from any discussion or vote related to this entity. The Board reviewed the initial questionnaire responses and took no action.

City of Ramer

The City of Ramer was reported to the Board as having a low validity score of 69. The City has put policies in place to strengthen their validity score moving forward. The Mayor of Ramer has also contacted MTAS to provide a comprehensive rate study. The Board took no action.

Town of Spring City

The Town of Spring City was reported to the Board as having a low validity score of 67. The Board reviewed an updated AWWA Reporting Worksheet submitted by the Town, and took no action.

City of South Fulton

The City of South Fulton was reported to the Board as having a low validity score of 67. The Board reviewed the initial questionnaire responses from the City and directed staff to request a copy of the City's written billing adjustment policy. The Board took no further action.

Town of Hornsby

The Town of Hornsby was reported to the Board as having a low validity score of 66. The Board reviewed the initial questionnaire responses, and took no action.

Status reports – Water loss

Mr. Greer explained that status reports are presented simply to update the Board on certain matters specific to the entities involved. No action is taken unless specified by members. The entities will continue to be monitored by the Board until compliance is reached.

City of Bells

At the previous Board meeting, the City was required to develop a proactive leak detection policy and put all policies in writing. Those policies were presented to the Board, and no further action was taken.

Town of Greenfield

At the previous Board meeting, the Town was required to develop a proactive leak detection policy and put all policies in writing. Those policies were presented to the Board, and no further action was taken.

Town of Cumberland Gap

At the previous Board meeting, members noted the need for the Town to adopt an ongoing meter replacement and calibration policy. Those policies were presented to the Board, and no further action was taken.

City of Middleton
The City of Middleton was reported to the Board as having a low validity score of 69. The City submitted an updated AWWA Reporting Worksheet, and the Board took no action.

Updated Depreciation Schedule
Mr. Wiggins moved to accept the updated depreciation schedule, provided by the Division of Local Government Audit in the Comptroller's office, as the official guidance of the Board. Mr. Heidel seconded the motion, which passed unanimously.

Miscellaneous

Compliance reports
A compliance report for the cities of Kenton and Grand Junction was included in the packet.

Jurisdiction List
An updated schedule identifying all systems which were currently under the Board's jurisdiction was included in the packet. A separate sheet was included for those the systems dealing only with excessive non-revenue water or a low validity score.

The next meeting is scheduled for December 3, 2015, at 9:00 a.m. in room 31 of Legislative Plaza. This meeting will be followed by a concurrent meeting with the Utility Management Review Board.

Ms. Butterworth adjourned the meeting at 10:30 a. m.

Respectfully submitted,

Ann Butterworth
Chair

Joyce Welborn
Utilities Board Manager

Financial Distress Cases

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case: **City of Luttrell**
Mayor: **Johnny Merritt**
Customers: **939, sewer only**

The City of Luttrell (City) has been reported to the Water and Wastewater Financing Board (Board) as having two consecutive years with a negative net change in net position, in its sewer fund, as of June 30, 2014. The City was also under the Board for financial distress from 2007 through 2010. A sheet reflecting the financial and rate history is attached.

The City has had an operating loss for a minimum of 8 years, but grants and capital contributions have allowed them to be in financial compliance. The City received a total of $474,820 in grant money during the 2015 fiscal year. This will effectively put the City in compliance as soon as their audit is received (Due by December 31, 2015). The grant money was used for upgrading the wastewater plant, adding a second clarifier, and replacing grinder pumps at certain residential properties.

While the City will be in compliance for the 2015 fiscal year, the Mayor would still like to move forward with increasing rates and creating different customer classifications. Currently the City has one rate for all residential customers and a separate rate for the only industrial customer. There is an opportunity to charge the school system, one industrial customer, and customers outside of the corporate boundaries a different rate.

Staff recommends the Board request, by formal order, the City of Luttrell submit a corrective action plan staff no later than February 1, 2016.

CITY OF LUTTRELL								
HISTORY FILE								
	Audited	Audited	Audited	Audited	Audited	Audited	Audited	Audited
Fiscal Year 6/30	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Sewer revenues	$ 243,728	$ 271,514	$ 276,044	$ 275,465	$ 337,351	$ 367,614	$ 367,301	$ 336,696
Other revenues	$ 64,937	$ 29,419	$ 22,523	$ 56,773	$ 11,556	$ 25,956	$ 17,585	$ 25,969
Capital contributions				$ 20,107	$ 441,147	$ 289,473	$ 14,920	$ 11,719
							$ 53,793	
Total Operating Revenues	**$ 308,665**	**$ 300,933**	**$ 298,567**	**$ 352,345**	**$ 790,054**	**$ 683,043**	**$ 453,599**	**$ 374,384**
Total Operating Expenses	**$ 517,293**	**$ 490,656**	**$ 526,477**	**$ 530,026**	**$ 526,045**	**$ 563,658**	**$ 588,150**	**$ 575,379**
Operating Income	$ (208,628)	$ (189,723)	$ (227,910)	$ (177,681)	$ 264,009	$ 119,385	$ (134,551)	$ (200,995)
Interest Expense	$ 16,838	$ 16,145	$ 15,654	$ 15,211	$ 14,712	$ 14,159	$ 7,543	$ 12,021
Grants			$ -					
Change in Net Position	**$ (225,466)**	**$ (205,868)**	**$ (243,564)**	**$ (192,892)**	**$ 249,297**	**$ 105,226**	**$ (142,094)**	**$ (213,016)**
Operating Transfer								
Supplemental Information								
Principal payment	$ 6,538	$ 7,327	$ 7,760	$ 8,218		$ 9,217	$ 8,218	$ 11,355
Depreciation	$ 218,420	$ 216,211	$ 213,403	$ 213,286	$ 221,088	$ 217,478	$ 213,286	$ 205,306
Sewer Rates					Sep-10			
Residential								
0 - 3,000 gallons	$ 17.00	$ 17.00	$ 17.00	$ 17.00				
Per 1000 gallons for all over	$ 4.25	$ 4.25	$ 4.25	$ 4.25				
Residential/commercial								
0 - 2,000 gallons					$ 20.25	$ 20.25	$ 20.25	$ 20.25
All over					$ 5.25	$ 5.25	$ 5.25	$ 5.25
Industrial								
0 - 2,000 gallons					$ 75.00			
All over					$ 15.00			
Tap fee inside	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
Tap fee outside	$ 3,800	$ 3,800	$ 3,800	$ 3,800	$ 3,800	$ 3,800	$ 3,800	$ 3,800
Customers	810	837	933	961	961	961	960	939

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case:	**City of Rocky Top**
Mayor:	**Timothy L. Sharp**
Customers:	**781 Water, 932 sewer**
Validity Score:	**73**
Non-Revenue Water:	**16.00%**

The City of Rocky Top (City) has been reported to the Water and Wastewater Financing Board (Board) as having two consecutive years with a negative net change in net position, in its water and sewer fund, as of June 30, 2014. A sheet reflecting the financial and rate history is attached.

The City has had an operating loss for a minimum of 5 years, but grants and capital contributions have allowed them to be in financial compliance.

All water is purchased from Anderson County Water Authority (ACWA) at a rate of $1.50 per 1,000 gallons. Water loss has been over 50% by volume since 2012. AWCA has been in unofficial talks to take over the City system, and most of the City Council members would support a consolidation.

On July 1, 2015, the City lowered the minimum bill usage from 2,000 gallons to 1,500 gallons. The City also hired a debt recovery firm based in Knoxville to handle delinquent accounts. In June over $83,000 of bad debts were written off. On October 1, 2015, the City used funds from a Community Development Block Grant to hire Rye engineering to find leaks.

Staff recommends the Board request, by formal order, the City of Rocky Top submit a corrective action plan to staff no later than February 1, 2016.

CITY OF ROCKY TOP					
HISTORY FILE					
	Audited	Audited	Audited	Audited	Audited
FYE 6/30	**2010**	**2011**	**2012**	**2013**	**2014**
Water /Sewer Revenue			$ 786,149	$ 793,928	$ 764,842
Water Revenue	$ 358,181	$ 352,687			
Sewer Revenue	$ 401,024	$ 431,914			
Other Revenue	$ 48,384	$ 29,130	$ 36,800	$ 31,700	$ 38,635
Total Revenue	**$ 807,589**	**$ 813,731**	**$ 822,949**	**$ 825,628**	**$ 803,477**
Total Expense	**$ 848,264**	**$ 886,846**	**$ 1,004,228**	**$ 1,044,804**	**$ 1,060,578**
Operating Income	$ (40,675)	$ (73,115)	$ (181,279)	$ (219,176)	$ (257,101)
Grant revenue	$ 94,207	$ 171,304			
Capital contributions			$ 209,720		
Transfers in(out)					
Interest Expense	$ (23,200)	$ (22,304)	$ (22,645)	$ (16,096)	$ (17,857)
Change Net Position	**$ 30,332**	**$ 75,885**	**$ 5,796**	**$ (235,272)**	**$ (274,958)**
Additional Info					
Principal payment	$ -	$ -	$ 23,183	$ 75,507	$ 58,705
Depreciation	$ 291,466	$ 288,518	$ 284,395	$ 285,483	$ 288,464
Water/Sewer Rates					
Inside					
First 2,000 gallons			$ 14.40	$ 14.40	$ 14.40
All Over			$ 7.30	$ 7.30	$ 7.30
Residential - Inside					
First 2,000 gallons	$ 13.40	$ 13.40			
All Over	$ 6.80	$ 6.80			
All Other Users - Inside					
First 2,000 gallons	$ 20.50	$ 20.50			
All Over	$ 7.50	$ 7.50			
Outside					
Water					
First 2,000 gallons			$ 21.50	$ 21.50	$ 21.50
All Over			$ 8.00	$ 8.00	$ 8.00
Sewer					
First 3,000 gallons			$ 21.50	$ 21.50	$ 21.50
All Over			$ 8.00	$ 8.00	$ 8.00
Residential - Outside					
First 2,000 gallons	$ 20.50	$ 20.50			
All Over	$ 7.50	$ 7.50			
All Other Users - Outside					
First 2,000 gallons	$ 20.50	$ 20.50			
2,001-40,000	$ 9.50	$ 9.50			
All Over	$ 10.00	$ 10.00			
Water Customers	816	796	798	781	781
Sewer Customers	985	952	763	932	932
Water Loss	46.07%	39.83%			
Validity Score			**79**	**79**	**73**
Non-revenue water			**23.00%**	**21.30%**	**16.00%**

Financial Distress

Status Updates

City of Bluff City

4391 Bluff City Highway • Bluff City, TN 37618
Telephone: (423) 538-7144 • Fax: (423) 538-7138
Email: bluffcitycityof@aol.com

Mailing Address:
P.O. Box 70
Bluff City, Tennessee 37618

Tri-Cities TN/VA
All-America City
1999

June 23, 2015

Ms. Joyce M. Welborn
State of Tennessee – Comptroller of the Treasury
Utilities Management Review Board
State Capitol
Nashville, TN 37243-9034

JUN 30 2015

Re: Bluff City, Tennessee – Sullivan County
Utilities Rate Increases

Dear Ms. Welborn:

This letter is in reference to our recent conversation concerning proposed utility (water and sewer) rate increases for the Town of Bluff City, Tennessee during fiscal years 2016 and 2017 respectively. The proposed increases are subsequent to the previously enacted 15% increase for water and sewer utilities during fiscal year 2015.

The previous Board of Mayor and Alderman (BMA) had entertained consecutive 15% utility rate increases for fiscal years 2015, 2016 and 2017 respectively for an overall aggregate increase of 52.09% by the end of FY 2017. These increases were based upon current rates, income and expenses for current operations and the consideration of future project planning factors developed by our Staff and our consulting engineer, Mattern & Craig. These increases to the existing rate structure were intended to fund ongoing operations; all existing debt service; debt service for proposed water and sewer improvements (to be funded through a pending USDA– RD– RUS grant/loan); and to build a fund for unanticipated service needs and/or emergencies.

The spring 2015 Election resulted in significant membership changes for the BMA. These changes were primarily due to constituent concerns related to the financial management of the City and its utilities; and grave concerns over the 52.09% aggregate utility rate increase by FY 2017. Given these concerns, the newly elected BMA requested a review of the proposed increases for the remaining fiscal years 2016 and 2017 respectively; and on June 2, 2015 voted to revise the proposed increases for those years. The revised water and sewer increases would be 8% each year for the next two years in lieu of the previously proposed 15% increase each year for FY 2016 and FY

2017 respectively. Therefore, an overall aggregate increase of 34.14% would be realized in place of the previously proposed 52.09% by FY 2017. Based upon the previous assumptions made with respect to the continuance of funded operations and debt service, the City should continue to meet its anticipated obligations and to accrue an emergency fund albeit at a lessor projected rate of accumulation ($17,000.00 annually).

With this action, the BMA seeks to provide sound financial policy and to address the immediate concerns of the electorate. The provision of well-managed and funded utilities services during this period when over-due capital improvements are completed; while simultaneously answering the concerns of our citizens and their ability to sustain payment during these times of financial duress remains an important goal for Staff and the BMA. We intend to closely monitor the utility operations accounts and all factors involved in order to make any necessary adjustments as such may arise.

I wish to thank you for the valuable assistance that you provide the citizens of Bluff City and hope to answer any questions or concerns that you may have. Please feel free to contact me at your convenience so that we may discuss the issue in greater detail.

Sincerely,
TOWN OF BLUFF CITY

Irene Wells

Irene Wells
Mayor/City Manager

CITY OF BLUFF CITY							
HISTORY FILE							
	Audited	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**
Fiscal year ending 6/30	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Water and sewer revenues	$ 452,635	$ 426,492	$ 456,959	$ 509,777	$ 540,616	$ 562,632	$ 560,633
Other revenues	$ 691	$ 175	$ 960	$ 1,032	$ 1,315	$ 1,140	$ 29,831
Total Operating Revenues	**$ 453,326**	**$ 426,667**	**$ 457,919**	**$ 510,809**	**$ 541,931**	**$ 563,772**	**$ 590,464**
Total Operating Expenses	**$ 525,146**	**$ 461,764**	**$ 506,298**	**$ 421,066**	**$ 531,799**	**$ 607,036**	**$ 652,492**
Operating Income	$ (71,820)	$ (35,097)	$ (48,379)	$ 89,743	$ 10,132	$ (43,264)	$ (62,028)
Interest Expense	$ 41,200	$ 40,092	$ 38,251	$ 37,216	$ 36,833	$ 33,617	$ 35,260
Transfer	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,494
Change in Net Position	**$ (113,020)**	**$ (75,189)**	**$ (86,630)**	**$ 52,527**	**$ (26,701)**	**$ (76,881)**	**$ (116,782)**
Supplemental Information							
Principal payment	$ 26,330	$ 13,712	$ 58,875	$ 14,790	$ 31,760	$ 33,790	$ 35,273
Depreciation	$ 119,620	$ 120,032	$ 120,188	$ 120,188	$ 121,208	$ 123,800	$ 120,107
Water rates							
Inside							
First 2,000 gallons	$ 8.06	$ 8.14	$ 8.47	$ 9.32	$ 10.25	$ 11.25	$ 12.18
All over	$ 3.14	$ 3.17	$ 3.30	$ 3.63	$ 3.99	$ 4.39	$ 4.74
Outside							
First 2,000 gallons	$ 14.65	$ 14.79	$ 15.39	$ 16.93	$ 18.62	$ 20.48	$ 22.12
All over	$ 4.71	$ 4.75	$ 4.94	$ 5.43	$ 5.97	$ 6.57	$ 7.10
Sewer rates							
Inside							
First 2,000 gallons	$ 10.23	$ 10.33	$ 10.75	$ 11.83	$ 13.01	$ 14.31	$ 15.45
All over	$ 5.49	$ 5.54	$ 5.77	$ 6.34	$ 6.97	$ 7.67	$ 8.24
Outside							
First 2,000 gallons	$ 15.48	$ 15.63	$ 16.26	$ 17.89	$ 19.68	$ 21.65	$ 23.38
All over	$ 8.23	$ 8.31	$ 8.65	$ 9.51	$ 10.46	$ 11.51	$ 12.43
Water customers	1,040	1,042	1,046	1,050	1,047	1,038	1,045
Sewer customers	671	667	677	676	667	664	665
Water loss	**43.06%**	**36.87%**	**33.63%**	**37.40%**			
Validity Score					**72**	**69**	**77**
Non-revenue water as %					**5.70%**	**16.90%**	**12.00%**

WATER AND WASTEWATER FINANCING BOARD
Status Update

Case: Town of Stanton
Mayor: Allan Sterbinsky
Customers: 274 water, 242 sewer
Validity Score: 74
Water Loss: 11.9%

The Town of Stanton has been reported to the Water and Wastewater Financing Board as being financially distressed based on a negative change in net position for a third consecutive year in its water and sewer system. The financial and rate history is attached.

Both the water and sewer system belonging to the Town of Stanton are operated and managed by Brownsville Energy Authority (BEA) under a contract with expenses of approximately $30,000 annually. The Town sells water to Haywood County Utility District, which is also operated and managed by Brownsville.

Currently, all revenues and expenses are handled completely by BEA. BEA has authority to make purchases up to $5,000 without any type of oversight from the Mayor or Board of Aldermen. BEA also holds all monies from the system in a bank account and the Mayor may request funds for various expenses as needed.

Effective January 1, 2015, the Town raised water and sewer rates 60% based on an MTAS rate study. The Town has applied for grants to rehab the sewer lagoon and restore an outdated water tank.

TOWN OF STANTON									
HISTORY FILE									
	Audited	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**
FYE 6/30	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
W/S Revenues	$ 55,964	$ 78,087	$ 81,179	$ 76,062	$ 75,756	$ 108,663	$ 118,089	$ 128,043	$ 110,998
Other revenues	$ 2,377	$ 3,431	$ 3,338	$ 2,190	$ 1,768	$ 4,273	$ 602	$ 603	$ 589
Total Rev	**$ 58,341**	**$ 81,518**	**$ 84,517**	**$ 78,252**	**$ 77,524**	**$ 112,936**	**$ 118,691**	**$ 128,646**	**$ 111,587**
Total Exp.	**$ 103,726**	**$ 108,199**	**$ 99,381**	**$ 98,331**	**$ 102,719**	**$ 112,011**	**$ 199,708**	**$ 140,910**	**$ 168,995**
Operating Income	$ (45,385)	$ (26,681)	$ (14,864)	$ (20,079)	$ (25,195)	$ 925	$ (81,017)	$ (12,264)	$ (57,408)
Interest Expense	$ 948	$ 864	$ 1,039	$ 181					
Change in Net Position	**$ (46,333)**	**$ (27,545)**	**$ (15,903)**	**$ (20,260)**	**$ (25,195)**	**$ 925**	**$ (81,017)**	**$ (12,264)**	**$ (57,408)**
Additional Info									
Principal payment	$ 555	$ 612	$ 437	$ 16,779					
Depreciation	$ 35,598	$ 35,551	$ 35,456	$ 35,335	$ 35,127	$ 39,291	$ 38,617	$ 38,072	$ 38,045
Water rates									
First 2,000 gallons outside	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 10.15	$ 10.15	$ 10.15
First 2,000 gallons inside	$ 5.00	$ 5.00	$ 5.00	$ 5.00	$ 5.00	$ 5.00	$ 7.25	$ 7.25	$ 7.25
All over 2,000 gallons	$ 1.75	$ 1.75	$ 1.75	$ 1.75	$ 1.75	$ 1.75	$ 2.54	$ 2.54	$ 2.54
Wholesale commercial outside			$ 150.00	$ 150.00	$ 150.00	$ 150.00	$ 150.00	$ 150.00	$ 150.00
Water customers			264	264	267	265	270	274	274
Sewer rate									
Flat rate for all per month	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 4.35	$ 4.35	$ 4.35
Per 1,000 gallons	$ 1.75	$ 1.75	$ 1.75	$ 1.75	$ 1.75	$ 1.75	$ 2.54	$ 2.54	$ 2.54
Sewer customers			233	233	235	235	238	242	242
Water Loss			**9.747%**	**11.491%**	**9.100%**	**9.751%**	**11.582%**		
Validity Score								**97**	**74**
Non-revenue water								**69.00%**	**11.90%**

Water Loss Cases

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

? C lick to access definition
+ C lick to add a comment

Water Audit Report for: Ripley Gas, Water & Wastewater Department (0000580)
Reporting Year: 2014 7/2013 - 6/2014

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Master Meter and Supply Error Adjustments		
					Pcnt:	Value:	
Volume from own sources:	7	481.405	MG/Yr	2	-3.00%		MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	7	43.872	MG/Yr	2	-3.00%		MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 451.065 MG/Yr

AUTHORIZED CONSUMPTION

C lick here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	8	364.523	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	n/a	0.000	MG/Yr			
Unbilled unmetered:		5.638	MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 370.161 MG/Yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 80.904 MG/Yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		1.128	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	0.000	MG/Yr		MG/Yr
Systematic data handling errors:		0.911	MG/Yr	0.25%	MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 2.039 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 78.865 MG/Yr

WATER LOSSES: 80.904 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 86.542 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	5	100.0	miles
Number of active AND inactive service connections:	6	4,400	
Service connection density:		44	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 6 90.0 psi

COST DATA

Total annual cost of operating water system:	9	$1,550,562	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$4.21	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	8	$1,076.74	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 70 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Ripley Gas, Water & Wastewater Department (0000580)
Reporting Year: 2014 | 7/2013 - 6/2014

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 70 out of 100 ***

System Attributes:

	Apparent Losses:	2.039	MG/Yr
+	Real Losses:	78.865	MG/Yr
=	Water Losses:	80.904	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	39.45	MG/Yr
	Annual cost of Apparent Losses:	$8,587	
	Annual cost of Real Losses:	$84,917	Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	19.2%	
	Non-revenue water as percent by cost of operating system:	6.4%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	1.27	gallons/connection/day
	Real Losses per service connection per day:	49.11	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.55	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	78.86	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.00	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

116 Church Street
P.O. Box 26
Ripley, TN 38063
(731) 635-1212 Fax (731) 635-0892

September 8, 2015

RE: State of TN Water & Wastewater Financing Board Letter

In response to the letter received from the State of Tennessee Comptroller's office, dated August 11, 2015 notifying Ripley Gas, Water & Wastewater of the unacceptable validity score of 70 for the June 30, 2014 audit, changes have already been implemented within the department and the current score is now 73. Additional changes will be implemented during this year which will further increase the validity score.

The following list of questions was received from the State of Tennessee Water and Wastewater Financing Board and will be answered as stated below:

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc.
   Yes, we bill for all general government use, including but not limited to City Hall, Ripley Parks & Recreation, Ripley Public Works, Ripley Fire Department, Lauderdale County Schools, Lauderdale County Courthouse, etc.
2. Are you accounting for the water used by the water and/or sewer departments?
   Yes, all water and sewer usage by the department is billed to the department and paid.
3. Do you periodically check or inspect all 2" and larger meters?
   We have recently approved a policy to begin inspecting all 2" and larger meters. (See attached)
4. Do you have a recalibration policy and procedure in place?
   The raw water meter and finished water meter at the water treatment plant are currently recalibrated yearly.
5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?
   All water meters were changed out in 2010. The water meter change-out policy is based on age. (See attached)
6. Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?
   All meters are read monthly, including inactive meters. If an inactive meter shows usage, an investigation is performed to see whether the meter lock was broken and notify authorities if needed. A theft charge will be assessed pending investigation.

7. Do you have a leak detection program currently in place?
   We do not currently have a leak detection program in place however, employees routinely patrol the system looking for leaks and customers generally call and report anything they see that might be a leak.
8. Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?
   Yes, all levels of the staff follow the billing adjustment policy. (See attached)
9. Do you have authorized non-customer users (volunteer fire departments, etc)? Do you account for the use? Do you have a method for the user to report water usage?
   Yes, the Fire Department is an authorized non-customer user. They track their usage and turn in a report to the department each year.
10. Is your system "zoned" to isolate water loss?
    Yes, we have tanks and valves strategically located through-out our system.
11. Do you search for leaks at night when there is little traffic or small household usage?
    No, we do not search for leaks at night.
12. Do you or can you control pressure surges?
    Yes, we can control pressure surges because our system is gravity fed.
13. Do you have or have access to leak detection equipment?
    No, we do not have any access to leak detection equipment.
14. What is your policy for notifying customers they have a leak?
    Our AMR Software allows a leak report to be generated each month. The billing clerk notifies customers monthly of leaks.
15. Do you have a public relations program to encourage citizens to report leaks?
    Advertisements to remind customers to report leaks are sent out as needed.
16. Do you have a policy to prosecute water theft or meter tampering/damage?
    Yes, if there is water theft or meter tampering, the authorities are notified and there are additional theft charges added to the customer's account.
17. What is the monetary value of the lost water?
    80.904 Million Gallons of water @ $1,076.74/Million Gallons = $87,112.57 This 80 Million Gallons of water includes draining tanks for inspection, back-washing filters at the water treatment facility and fire protection water used.
18. Is the cost to repair the leak justified based on the amount of water being lost?
    Yes, all leaks that we are aware of are repaired in the order depending on the severity of the leak.

Original Score 12/31/14

AWWA Free Water Audit Software

Reporting Worksheet

Click to access definition
Click to add a comment

Water Audit Report for: Ripley Gas, Water & Wastewater Department (0000580)
Reporting Year: 2014 7/2013 - 6/2014

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Enter grading in column 'E' and 'J' ——>

Master Meter and Supply Error Adjustments

WATER SUPPLIED

			Pcnt:	Value:	
Volume from own sources:	7	481.405 MG/Yr	2 -3.00%		MG/Yr
Water imported:	n/a	0.000 MG/Yr	n/a		MG/Yr
Water exported:	7	43.872 MG/Yr	2 -3.00%		MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 451.065 MG/Yr

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

			Pcnt:	Value:	
Billed metered:	8	364.523 MG/Yr			
Billed unmetered:	n/a	0.000 MG/Yr			
Unbilled metered:	n/a	0.000 MG/Yr			
Unbilled unmetered:		5.638 MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 370.161 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 80.904 MG/Yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		1.128 MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	0.000 MG/Yr			MG/Yr
Systematic data handling errors:		0.911 MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 2.039 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 78.865 MG/Yr

WATER LOSSES: 80.904 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 86.542 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	5	100.0	miles
Number of active AND inactive service connections:	6	4,400	
Service connection density:		44	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	6	90.0	psi

COST DATA

Total annual cost of operating water system:	9	$1,550,562	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$4.21	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	8	$1,076.74	$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 70 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Unauthorized consumption

UPDATED SCORE 1/1/15

AWWA Free Water Audit Software

Reporting Worksheet

Click to access definition

Click to add a comment

Water Audit Report for: Ripley Gas, Water & Wastewater Department (0000580)

Reporting Year: 2014 (7/2013 - 6/2014)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Enter grading in column 'E' and 'J' ——>

Master Meter and Supply Error Adjustments

WATER SUPPLIED				Pcnt:	Value:	
Volume from own sources:	8	481.405	MG/Yr	2	-3.00%	MG/Yr
Water imported:	n/a	0.000	MG/Yr	n/a		MG/Yr
Water exported:	7	43.872	MG/Yr	2	-3.00%	MG/Yr

Enter negative % or value for under-registration

Enter positive % or value for over-registration

WATER SUPPLIED: 451.065 MG/Yr

AUTHORIZED CONSUMPTION				Pcnt:	Value:	
Billed metered:	8	364.523	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	n/a	0.000	MG/Yr			
Unbilled unmetered:		5.638	MG/Yr	1.25%		MG/Yr

Click here: for help using option buttons below

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 370.161 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 80.904 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		1.128	MG/Yr	0.25%		MG/Yr
Customer metering inaccuracies:	5	0.000	MG/Yr			MG/Yr
Systematic data handling errors:	2	0.911	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 2.039 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 78.865 MG/Yr

WATER LOSSES: 80.904 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 86.542 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	5	100.0	miles
Number of active AND inactive service connections:	6	4,400	
Service connection density:		44	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	6	90.0	psi

COST DATA

Total annual cost of operating water system:	9	$1,550,562	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$4.21	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	8	$1,076.74	$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 73 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Unauthorized consumption

BRANN & WHITTEMORE, INC.
609 BRADLEY COURT
FRANKLIN, TENNESSEE 37067
TELEPHONE (615)377-9444 - FAX (615)377-1001

CALIBRATION DATA SHEET

DATE OF CALIBRATION: 1/2/2015

LOCATION: RIPLEY, TN

SYSTEM NAME: WTP

EQUIPMENT MFG: FOXBORO

MODEL #: IMT-25 TRANSMITTER

SERIAL #: 9100A MAG.

WORK PERFORMED: CHECK CAL. & OPERATION

CAL. & OPERATION OK

COMMENTS: RAW WATER FLOW TRANSMITTER: KEYPAD OUT OF SERVICE. THIS IS USED TO CHANGE FUNCTION AND/OR SCALES. AS LONG AS METER STAYS IN SAME LOCATION AND SCALES REMAIN THE SAME KEYPAD IS NOT REQUIRED DISPLAY IS OK AND WILL GIVE REQUIRED READINGS.

NEXT CALIBRATION DATE: 1/2016

CALIBRATION PERFORMED BY: David W Brann 1/2/15
12:45 PM

Attachment for Questions 3, 4 & 5

116 Church Street
P.O. Box 26
Ripley, TN 38063
(731) 635-1212 Fax (731) 635-0892

August 19, 2015

Gas & Water Meter Change-Out Policy

3% of all gas and water meters will be tested by each year by random sample. A minimum of 10 gas and 10 water meters will be tested each year.

All water meters that are larger than 4" and all gas meters that are larger than AL1000 will be tested each year.

All export water meters (Lauderdale County Water System) will be tested each year.

The raw water meter and the finished water meter at the Water Plant will be tested each year.

All water and gas meter tests should demonstrate that the meter is capable of measuring not less than 95% and not more than 105% of the water that passes through it.

It is recommended that the gas and water meters be changed out at least every 15 years and not to exceed 20 years. If a meter tests inaccurately, it will be changed out or rebuilt immediately. For all meters, the change-out program is as follows:

See attached meter change-out schedule.

METER CHANGE OUT PROGRAM 2023-2029

ROUTE NAME	CYCLE	# WM	# GM	CHANGE OUT YEAR
43	1	61	61	2023
36	2	186	265	2023
131	2	257	202	2023
132	2	112	99	2023
134	2	165	139	2024
37	3	192	227	2024
117	3	158	151	2024
123	3	213	193	2024
128	3	347	321	2025
129	3	333	244	2025
113	4	80	67	2025
115	4	246	224	2026
118	4	97	136	2026
119	4	244	213	2026
121	4	208	202	2026
124	4	224	137	2027
125	4	145	130	2027
126	4	351	185	2027
127	4	192	156	2027
45	5	1	2	2028
6	6	36	293	2028
8	6		259	2028
40	6	2	422	2028
109	6		307	2028
111	6	4	160	2028
130	6	5	206	2029
133	6	1	80	2029
38	7		265	2029
39	7		286	2029
42	7	1	308	2029
Totals		3,861	5,940	

2.4 No one shall cut, break or remove any of the Company's locks or seals.

2.5 In the event of theft of service, a deposit in the amount of 2-1/2 times the average bill for that premise and a $100 non-refundable service charge will be required to be paid prior to service restoration. Charges related to the estimated loss of billable service, expenses and any damages to equipment will also be due.

3. Meter Installation

3.1 The Company will provide and maintain adequate metering facilities to accurately measure the volume of water demanded by the Customer's equipment; however, water meters have definite capacities and no major addition to the water demand shall be made without the consent of the Company.

3.2 The physical location of the meter will be coordinated with the owner of the property in accordance with provisions in Section 3-4.

3.3 When two or more meters are to be installed on one premise, such as an office or apartment building, they shall be grouped in one common place accessible at all times.

4. Meter Test

4.1 The Company will at regular intervals and/or for any suspect inaccuracies, test their meters for accuracy. Any meter found to fall outside of acceptable limits established and published by the American Water Works Association (AWWA) will be repaired or replaced at the Company's expense.

4.2 Customers who request a meter to be tested and the meter does not fall in the Company's guidelines for testing, may have the meter tested by the Company for a $25.00 fee. Should the meter fail the test, the fee will be refunded.

4.3 Meters owned by the Customer must be tested at regular intervals and/or for any suspect inaccuracies. The Customer must bear the expense for the testing and for the repair or replacement of any meter that falls outside of acceptable limits established and published by AWWA.

5. Number of Meters

Attachment For Question 8

7.1 The Company's identified representatives shall be granted access to the Customer's premises at all reasonable times for the purpose of reading meters, for testing, inspecting, repairing, and replacing all equipment belonging to the Company, and for inspecting the Customer's wiring, piping, appliances and premises in order to determine that the Company's policies are being observed.

8. Notice of Trouble

8.1 The Customer shall notify the Company immediately should the service be unsatisfactory for any reason or should there be any defects, trouble, or accidents affecting the supply of utility service.

9. Water & Wastewater Adjustment Policy

9.1 The Company supplies water to its Customers on a metered basis. The Customer is responsible for water as recorded by the meter. However, the Company's serviceman will assist any Customer on an abnormal water usage and, based on his findings, the Company may make an adjustment for the following reasons:

Underground Leaks & Burst Pipes	Abnormal Situation
Unknown Leaks	Errors in Reading
Leak at Meter	Commode Leaks

9.2 Underground Leaks and Burst Pipes

9.2.1 Customer bills which are increased due to underground leaks or burst pipes should be adjusted so that he pays his normal bill, this will be calculated by water usage amounts over the last six months. If customer has not been at current location for six months, calculation will be for usage for months that customer moved in to this location. The wastewater charge should be adjusted according to the average water usage amount that was used for the leak adjustment. Customer is only allowed one leak adjustment during a twelve month period.

9.3 Unknown Leaks

9.3.1 Customer bills which are increased due to some unknown reason should be adjusted in accordance with the Company's standard procedure, that is, water and wastewater will be calculated using the average water usage during the last six months. Customer is only allowed one adjustment during a twelve month period.

9.4 Leak at Meter

Customer bills which are increased due to leak at the meter connection on customer's side will be adjusted back to the normal bill on both water and wastewater, adjustments will be calculated using the average water usage during the last six months. Customer is only allowed one leak adjustment during a twelve month period.

9.5 Abnormal Situation

9.5.1 Customer bills which are increased due to abnormal situations should be adjusted in accordance with the Company's standard procedure, that is water and wastewater will be calculated using the average water usage during the last six months. Customer is only allowed one leak adjustment during a twelve month period.

9.6 Errors in Reading

9.6.1 Customer bills which are increased or decreased due to errors in reading should be adjusted to the correct reading.

9.7 Commode Leaks

9.7.1 Customer bills which increased due to a commode leak may adjusted in accordance with the Company's standard procedure, that is, water and wastewater will be calculated using the average water usage during the last six months. Customer is only allowed one leak adjustment during a twelve month period.

Water Loss

Status Updates

AWWA WLCC Free Water Audit Software: Reporting Worksheet

WAS v4.2

Back to Instructions

? Click to access definition

Water Audit Report for: BYRDSTOWN WATER DEPT
Reporting Year: 2014 6/2013 - 7/2014

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	?	10	273.639	Million gallons (US)/yr (MG/Yr)	
Master meter error adjustment (enter positive value):	?				MG/Yr
Water imported:	?	10	0.000	MG/Yr	
Water exported:	?	10	27.681	MG/Yr	
WATER SUPPLIED:			245.958	MG/Yr	

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:
Billed metered:	?	8	119.500	MG/Yr		
Billed unmetered:	?			MG/Yr		
Unbilled metered:	?	10	8.769	MG/Yr		
Unbilled unmetered:	?	7	23.500	MG/Yr		23.500
AUTHORIZED CONSUMPTION:	?		151.769	MG/Yr		

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 94.189 MG/Yr

Apparent Losses

					Pcnt:	Value:
Unauthorized consumption:	?		0.615	MG/Yr	0.25%	

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	?	4	2.618	MG/Yr	2.00%	
Systematic data handling errors:	?	5	0.025	MG/Yr		
Apparent Losses:	?		3.258			

Choose this option to enter a percentage of billed metered consumption. This is NOT a default value

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	?	90.931	MG/Yr
WATER LOSSES:		94.189	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:	?	126.458	MG/Yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	?	9	200.0	miles	
Number of active AND inactive service connections:	?	9	3,000		
Connection density:			15	conn./mile main	
Average length of customer service line:	?	8	15.0	ft	(pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	?	5	100.0	psi	

COST DATA

Total annual cost of operating water system:	?	8	$1,106,649	$/Year
Customer retail unit cost (applied to Apparent Losses):	?	8	$4.38	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	?	8	$4,300.00	$/Million gallons

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	51.4%
Non-revenue water as percent by cost of operating system:	49.2%
Annual cost of Apparent Losses:	$14,268
Annual cost of Real Losses:	$391,005

Operational Efficiency Indicators

Apparent Losses per service connection per day:	2.98	gallons/connection/day
Real Losses per service connection per day*:	N/A	gallons/connection/day
Real Losses per length of main per day*:	1,245.64	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	58.25	million gallons/year
From Above, Real Losses = Current Annual Real Losses (CARL):	90.93	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.56	

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 82 out of 100 ***

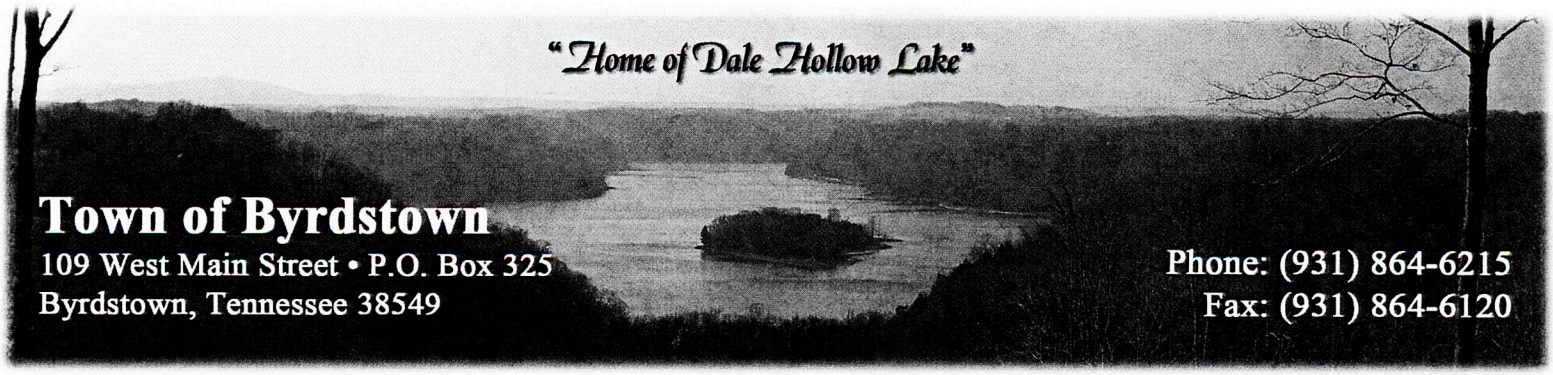
A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Customer metering inaccuracies
2: Unauthorized consumption
3: Systematic data handling errors

For more information, click here to see the Grading Matrix worksheet



Malcolm "Buster" Harmon
Town of Byrdstown
4092 Water Plant Rd
Byrdstown TN 38549
PWSID #0000088
September 29, 2015

OCT 05 2015

Dear Joyce Welborn:

This letter is in responses to the concerns the Board had about our AWWA water loss report. Steve Roberts with TAUD came and helped us refine our report due to some miss calculations in the area of variable production cost and non-revenue as percent of operating system.

In closed I have included the updated AWWA Report, American Development Corp chemical cost, and Volunteer Electric Corp electric cost for the plant and raw water pump station. I apologize for the inaccurate results. If I can be of further assistance please contact me at the info below.

Sincerely,

Plant Supt.

Malcolm "Buster" Harmon Supt
Byrdstown Water Plant
4092 Water Plant Rd
Byrdstown, Tn 38549
Plant 931-864-3859
Fax 931-864-7956
Cell 931-319-9372

AWWA WLCC Free Water Audit Software: Reporting Worksheet

WAS v4.2

Back to Instructions

? Click to access definition

Water Audit Report for: BYRDSTOWN WATER DEPT

Reporting Year: 2014 6/2013 - 7/2014

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	?	10	273.639	Million gallons (US)/yr (MG/Yr)
Master meter error adjustment (enter positive value):	?			MG/Yr
Water imported:	?	10	0.000	MG/Yr
Water exported:	?	10	27.681	MG/Yr
WATER SUPPLIED:			245.958	MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:
Billed metered:	?	8	119.500	MG/Yr		
Billed unmetered:	?			MG/Yr		
Unbilled metered:	?	10	8.769	MG/Yr		
Unbilled unmetered:	?	7	23.500	MG/Yr		23.500
AUTHORIZED CONSUMPTION:	?		151.769	MG/Yr		

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)

94.189 MG/Yr

Apparent Losses

					Pcnt:	Value:
Unauthorized consumption:	?		0.615	MG/Yr	0.25%	
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed						
Customer metering inaccuracies:	?	4	2.618	MG/Yr	2.00%	
Systematic data handling errors:	?	5	0.025	MG/Yr		
Apparent Losses:	?		3.258			

? Choose this option to enter a percentage of billed metered consumption. This is NOT a default value

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	?		90.931	MG/Yr
WATER LOSSES:			94.189	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:	?		126.458	MG/Yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	?	9	200.0	miles	
Number of active AND inactive service connections:	?	9	3,000		
Connection density:			15	conn./mile main	
Average length of customer service line:	?	8	15.0	ft	(pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	?	5	100.0	psi	

COST DATA

Total annual cost of operating water system:	?	8	$1,106,649	$/Year
Customer retail unit cost (applied to Apparent Losses):	?	8	$9.48	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	?	8	$605.71	$/Million gallons

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	51.4%
Non-revenue water as percent by cost of operating system:	9.5%
Annual cost of Apparent Losses:	$30,882
Annual cost of Real Losses:	$55,078

Operational Efficiency Indicators

Apparent Losses per service connection per day:	2.98	gallons/connection/day
Real Losses per service connection per day*:	N/A	gallons/connection/day
Real Losses per length of main per day*:	1,245.64	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	58.25	million gallons/year
From Above, Real Losses = Current Annual Real Losses (CARL):	90.93	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.56	

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 82 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Customer metering inaccuracies

2: Unauthorized consumption

3: Systematic data handling errors

For more information, click here to see the Grading Matrix worksheet

Buster

864-7956

8p.

ADC

Town of Byrdstown
Vendor History Report

Order By	Vendor Number
Vendor Number Range	3 To 3
Vendor Name Range	Not Applicable
Vendor Type	General Vendors
Transaction Date Range	07/01/2014 To 06/30/2015
Include Miscellaneous Vendors	☑
Include Checks	☑
Include Vouchers	☐
Print Vendor Totals Only	☐
Print Voucher Expense Detail	☐

Check Type	Check Number	Check Date	Checking Account	Check Amount	Void
Vendor 3	ADC AMERICAN DEVELOPMENT		821 WILLIAM D JONES BLVD	Fayetteville, TN 37334	
Regular	6421	07/02/2014	411-11212-0000	$1,218.25	☐
Regular	6447	07/24/2014	411-11212-0000	$2,396.50	☐
Regular	6484	08/13/2014	411-11212-0000	$1,485.00	☐
Regular	6496	08/20/2014	411-11212-0000	$3,011.42	☐
Regular	6532	09/11/2014	411-11212-0000	$2,076.36	☐
Regular	6552	09/23/2014	411-11212-0000	$1,207.89	☐
Regular	6577	10/07/2014	411-11212-0000	$2,151.61	☐
Regular	6604	10/22/2014	411-11212-0000	$1,064.58	☐
Regular	6624	11/06/2014	411-11212-0000	$1,573.89	☐
Regular	6645	11/18/2014	411-11212-0000	$2,490.39	☐
Regular	6653	11/24/2014	411-11212-0000	$903.54	☐
Regular	6689	12/17/2014	411-11212-0000	$3,401.27	☐
Regular	6707	01/07/2015	411-11212-0000	$2,647.89	☐
Regular	6739	02/05/2015	411-11212-0000	$3,174.18	☐
Regular	6764	02/25/2015	411-11212-0000	$2,865.92	☐
Regular	6784	03/19/2015	411-11212-0000	$2,805.39	☐
Regular	6809	04/08/2015	411-11212-0000	$3,678.04	☐
Regular	6825	04/21/2015	411-11212-0000	$2,503.89	☐
Regular	6852	05/14/2015	411-11212-0000	$1,918.89	☐
Regular	6892	06/04/2015	411-11212-0000	$2,212.39	☐
Regular	6920	06/30/2015	411-11212-0000	$2,475.42	☐
Check Totals For Vendor 3	ADC AMERICAN DEVELOPMENT CORP.		21 Checks	$47,262.71	

(1)

Created by maryt - 09/15/2015 12:13:29 PM EDT

Service Location : CITY OF BYRDSTOWN, Cust#: 52328

Account Level [Set Aside]

7815 0007815 PUMPING STA LAKE

Location | Consumption History | Meter History | Reading | Service Calls

Customer <None> Provider <None> View <None>

Consumption History

Account	Billing Period	Days	Read Date	Read	Usage	Usage	Demand	Peak kVAR
781510	Jul 2015	64	07/20/2015	8743	4,776.48	65,184	1.706	0.000
781510	Jun 2015	64	06/22/2015	8067	4,370.32	59,712	1.728	0.000
781510	May 2015	64	05/21/2015	7442	4,746.14	63,840	1.705	0.000
781510	Apr 2015	64	04/20/2015	6771	4,274.64	63,360	1.627	0.000
781510	Mar 2015	64	03/17/2015	6117	4,541.17	64,416	2.385	0.000
781510	Feb 2015	64	02/17/2015	5446	4,618.40	64,416	1.470	0.000
781510	Jan 2015	64	01/20/2015	4875	4,503.91	62,400	1.784	0.000
781510	Dec 2014	64	12/19/2014	4225	4,918.93	58,392	1.591	0.000
781510	Nov 2014	64	11/19/2014	3648	4,151.14	58,368	1.588	0.000
781510	Oct 2014	64	10/20/2014	3040	4,297.28	58,224	1.576	0.000
781510	Sep 2014	64	09/19/2014	2433	4,266.71	59,232	1.570	0.000
781510	Aug 2014	64	08/20/2014	1814	4,614.20	61,536	1.572	0.000
781510	Jul 2014	64	07/21/2014	1175	5,087.96	66,528	1.565	0.000

Averages

	Month 1 to 12	Month 13 to Month 24	Month 25 to Month 36
Consumption Revenue	5,991.96	4,795.01	5,547.80
kWh	61816	48288	55776
Base Revenue	4,441.23	3,709.60	4,153.77
Demand	164.624	131.864	157.248
Demand Revenue	1,550.72	1,085.42	1,394.03

Add | Delete | Related

#58,160.36

Buster 22.

②

Created by maryt - 09/15/2015 12:16:15 PM EDT

Service Location : CITY OF BYRDSTOWN, Cust#: 52328

Account Level [Set Aside]

Customer <None> Provider <None> View <None>

Consumption History

Account	Billing Per...	KD Period	Read Date	Read	Use Revenue	Usage	Current Rate	Revenue Rate
783010	Jul 2015	699	07/20/2015	54237	4,654.52	62,400	0.993	1.102
783010	Jun 2015	699	06/22/2015	53912	4,176.06	55,686	0.990	1.125
783010	May 2015	699	05/21/2015	53622	4,512.38	59,328	1.065	1.175
783010	Apr 2015	699	04/20/2015	53313	4,243.52	54,336	1.299	1.406
783010	Mar 2015	699	03/17/2015	53030	4,929.13	70,080	1.130	1.212
783010	Feb 2015	699	02/17/2015	52699	4,575.95	58,797	1.046	1.414
783010	Jan 2015	699	01/20/2015	52399	5,561.33	78,912	1.353	1.453
783010	Dec 2014	699	12/19/2014	52078	4,834.01	68,160	1.030	1.213
783010	Nov 2014	699	11/19/2014	51543	4,428.09	62,208	1.086	1.154
783010	Oct 2014	699	10/20/2014	51215	4,274.61	56,832	1.015	1.116
783010	Sep 2014	699	09/19/2014	50923	4,207.40	57,408	1.004	1.185
783010	Aug 2014	699	08/20/2014	50624	4,568.20	59,904	1.125	1.214
783010	Jul 2014	699	07/21/2014	50312	5,872.07	65,472	0.998	1.099

Averages

	Month 1 to 12	Month 13 to Month 24	Month 25 to Month 36
Reporting Revenue	6,865.59	6,545.26	6,464.59
Use	63088	61040	58624
Use Revenue	4,611.60	4,564.05	4,376.92
Demand	216.944	199.568	210.816
Demand Revenue	2,254.00	1,981.21	2,087.67

Add Delete Related

$60,322.32

Miscellaneous

1. Approval of Rules
2. Compliance List
3. Jurisdiction List
4. Proposed 2016 Meeting Schedule

Water and Wastewater Financing Board
Compliance Reports
December 3, 2015

City of Kingston Validity Score 93, Non-Revenue Water 4.9%
Change in Net Position $335,401

City of Jellico Validity Score 77, Non-Revenue Water 13.7%
Change in Net Position $525,848

WATER AND WASTEWATER FINANCING BOARD		
Jurisdiction December 2015		
SYSTEM	**COUNTY**	**LAST AUDIT**
City of Bells WL	Crockett	2014
City of Bluff City	Sullivan	2014
Town of Brighton	Tipton	2014
Brownsville Energy Auth WL	Haywood	2014
Town of Byrdstown WL	Pickett	2014
Town of Chapel Hill	Marshall	2014
Coffee County WTA	Coffee	2014
City of Collinwood WL	Wayne	2014
City of Copperhill WL	Polk	2014
City of Covington	Tipton	2014
Town of Cumberland Gap WL	Claiborne	2014
Town of Decaturville WL	Decatur	2014
City of Dunlap WL	Sequatchie	2014
Town of Englewood	McMinn	2014
City of Erin WL	Houston	2014
City of Friendship	Crockett	2014
Town of Gainesboro	Jackson	2014
City of Germantown	Shelby	2014
City of Gleason	Weakley	2014
Greeneville Water Comm WL	Greene	2014
Town of Greenfield WL	Weakley	2014
Town of Henning WL	Lauderdale	2014
City of Hohenwald WL	Lewis	2014
Town of Hornsby WL	Hardeman	2014
Humphreys County	Humphreys	2014
Lincoln County BPU WL	Lincoln	2014
Town of Linden WL	Perry	2014
City of Lobelville WL	Perry	2014
City of Luttrell	Union	2014
City of McMinnville WL	Warren	2014
City of Middleton	Hardeman	2014
City of Millington WL	Shelby	2014
Town of Monterey WL	Putnam	2014
City of Munford	Tipton	2014
Town of Newbern	Dyer	2014
City of Niota	McMinn	2014
Town of Oakland WL	Fayette	2014
Town of Obion	Obion	2014
City of Puryear	Henry	2014
City of Ramer	McNairy	2014
City of Ripley WL	Lauderdale	2014
Cit of Rocky Top	Anderson/Campbell	2014
Town of Rutledge	Grainger	2014
City of South Fulton WL	Obion	2014
Town of Spring City WL	Rhea	2014
Town of Stanton	Haywood	2014
City of Sunbright	Morgan	2014
City of Sweetwater WL	Monroe/McMinn	2015
Town of Tiptonville WL	Lake	2014
Town of Vonore	Blount/Monroe	2015
City of Westmoreland	Sumner	2014

WATER LOSS STATUS

Utility system	original referral %	original audit referral date	subsequent review %	subsequent review date	subsequent review %	subsequent review date	subsequent review %	subsequent review date	subsequent review %	subsequent review date	subsequent review %	subsequent review date
Bells	68/17.6%	6/30/2014										
Brownsville Energy	67/20.6%	6/30/2014										
Byrdstown	82/49.2%	6/30/2014										
Chapell Hill	68/19.5%	6/30/2014										
Collinwood	68/86.8%	6/30/2009	51.30%	6/30/2010	51.30%	6/30/2011	46/5.4%	6/30/2012	46/7.4%	6/30/2013	68/86.8%	6/30/2014
Copperhill	73/47.2%	6/30/2014										
Cumberland Gap	81/30.1%	6/30/2014										
Decaturville	65/13.7%	6/30/2014										
Dunlap	81/35.1%	6/30/2013	64/0.4%	6/30/2014								
Englewood	82/27.0%	6/30/2014										
Erin	81/35.1%	6/30/2010	49.76%	6/30/2011	42.54%	6/30/2012	80/32.3%	6/30/2013	81/35.1%	6/30/2014		
Gainesboro	83/39.3%	6/30/2014										
Greeneville	92/29.5%	6/30/2014										
Greenfield	68/9.6%	6/30/2014										
Henning	48/5.8%	6/30/2014										
Hohenwald	81/47.3%	6/30/2010	36.00%	6/30/2011	36.00%	6/30/2012	81/48.0%	6/30/2013	81/47.3%	6/30/2014		
Hornsby	66/9.5%	6/30/2014										
Lincoln County BPU	70/33.3%	6/30/2014										
Linden	65/56.4%	6/30/2014										
Lobelville	85/52%	6/30/2014										
McMinnville	33.98%	6/30/2012	82/36.6%	6/30/2013	/26790111.8%	6/30/2014						
Middleton	69/3065.3%	6/30/2014										
Millington	65/2.2%	6/30/2013	65/2.3%	6/30/2014								
Monterey	81/46.2%	6/30/2014										
Oakland	66/5.1%	6/30/2013	66/5.1%	6/30/2014								
Ramer	69/11.80%	6/30/2014										
Ripley	70/6.4%	6/30/2014										
South Fulton	67/16.0%	6/30/2013	67/22.9%	6/30/2014								
Spring City	67/1.7%	6/30/2014										
Sweetwater	81/44.4%	6/30/2015										
Tiptonville	58/11.9%	6/30/2013	58/8.9%	6/30/2014								

Proposed 2016 WWFB Meeting Schedule

Thursday, January 14, 2016
Thursday, March 10, 2016
Thursday, May 12, 2016
Thursday, July 14, 2016
Thursday, September 08, 2016
Thursday, November 10, 2016

AGENDA #2
Meeting of the
Water and Wastewater Financing Board
December 3, 2015
10:00 am
Room 31, Legislative Plaza
301 Sixth Avenue North
(6th Avenue between Charlotte Avenue and Union Street)
Nashville, Tennessee

Call to Order

Tennessee Water Loss Regulatory History
AWWA Methodology
Water Research Foundation
Presentation of Draft Validity Score Non-Compliance Questionnaire Pg.45
Presentation of Draft Non-Revenue Water Non-Compliance Questionnaire Pg.49

Open Discussion

Visitors to the Legislative Plaza are required to pass through a metal detector and must present photo identification. Individuals with disabilities who wish to participate in this meeting or to review filings should contact the Office of State and Local Finance to discuss any auxiliary aids or services need to facilitate such participation. Such contact may be in person or by writing, telephone or other means, and should be made prior to the scheduled meeting date to allow time to provide such aid or service. Contact the Office of State and Local Finance (Mr. John Greer) for further information.

505 Deaderick Street, Suite 1500
James K. Polk State Office Building
Nashville, TN 37243-1402
Telephone (615) 401-7879
Fax (615) 741-6216
John.Greer@cot.tn.gov

_____Utility_____

Today's Date_____

Tennessee Check List for Water Audit Data Validity Score Compliance

Part 1: Water Supplied

Volume from own sources

Do you produce your own water? If yes, then answer the following questions. If no, then proceed to **Water imported.**

1. Is the water supplied into your distribution system from your own sources 100% metered?
2. List type of each source meter
3. When was the last time a comparative flow test was conducted on each source meter via a clear well drop test or with another calibrated meter?
    a. Do you have records of the last accuracy test?
4. At what frequency are the source meters tested for accuracy?
5. How often are electronic calibrations of related instrumentation conducted (4-20mA signal, etc.)?
6. How many source meters tested outside of +/- 6% accuracy in last test?
7. How many source meters tested outside of +/- 3% accuracy in last test?

Volume from own sources master meter and supply error adjustment

1. How often is production meter data recorded?
2. How often is meter data reviewed and adjusted if inaccuracies are found?
3. Are tank/storage level variations calculated and employed when determining "Water Supplied" component?
    a. If yes, how often?
    b. If yes, is it a manual process or automated via SCADA?

Water imported

Do you purchase water from a neighboring water utility? If yes, then answer the following questions. If no, then proceed to **Water exported**.

1. Is the water supplied into your distribution system from the neighboring water utility 100% metered?

2. List type of each import meter
3. When was the last time a comparative flow test was conducted on each import meter?
    a. Do you have records of the last accuracy test?
4. At what frequency are the import meters tested for accuracy?
5. How often is electronic calibrations of related instrumentation conducted (4-20mA signal, etc.)?
6. How many import meters tested outside of +/- 6% accuracy in last test?
7. How many import meters tested outside of +/- 3% accuracy in last test?

Water imported master meter and supply error adjustments

1. How often is import meter data recorded?
    a. Is this a manual process or automated via SCADA?
2. How often is meter data reviewed and adjusted if inaccuracies are found?

Water exported

Do you sell water to a neighboring water utility? If yes, then answer the following questions. If no, then proceed to **Billed metered.**

1. Is the water supplied to the neighboring water utility 100% metered?
2. List type of each export meter
3. When was the last time a comparative flow test was conducted on each export meter?
    a. Do you have records of the last accuracy test?
4. At what frequency are the export meters tested for accuracy?
5. How often is electronic calibrations of related instrumentation conducted (4-20mA signal, etc.)?
6. How many export meters tested outside of +/- 6% accuracy in last test?
7. How many export meters tested outside of +/- 3% accuracy in last test?

Water export master meter and supply error adjustments

1. How often is export meter data recorded?
2. Is this a manual process or automated via SCADA?
3. How often is meter data reviewed and adjusted if inaccuracies are found?

Part 2: Authorized Consumption

Billed metered

1. Are your billing records computerized?
2. Do you manually read your meters or do you use AMR or AMI?
3. Do you have a meter accuracy testing and replacement program?
    a. If yes, please describe the program including how you determine which meters to test and/or replace.

Unbilled metered

1. If you produce water, is water plant usage supplied from location before or after finished water meter?
    a. If after finished water meter, is plant usage metered?
        i. If yes, is it billed?
2. If you also operate a wastewater plant, is the potable water metered?
    a. Is it billed?
3. Do you have any other accounts that are metered but not billed?
    a. If yes, please list.

Customer metering inaccuracies

Is your entire customer population unmetered? If no, then answer the following questions. If yes, then proceed to **Systematic data handling errors.**

1. Are customer meters 2" and larger routinely tested for accuracy?
    a. If so, how often?
2. Do you routinely test the accuracy of older or high usage residential meters?
    a. If so, what percentage of your meters are tested annually?
3. Describe how your meter records are maintained and what type of information is contained in the records?
4. How did you determine the overall percent or value for the inaccuracies?

Systematic data handling errors

Did you use the default option? If no, then answer the following questions. If yes, then proceed to **Average operating pressure.**

1. Are zero consumption accounts flagged and investigated?
    a. If yes, how often?
2. Are the effects of misreads and billing adjustments on measured consumption well understood?

Part 3: System Data

Average operating pressure

1. How did you determine the average operating pressure of the distribution system?

_____Utility_____

Today's Date_____

Tennessee Check List for Excessive Non-Revenue Water Loss Compliance

Part 1: Authorized Consumption

1. Describe your method for metering or otherwise measuring delivery of water to and billing for use by general government operations such as City Hall, Parks, Community Centers, etc.
    a. Are any such users unmetered?
    b. If so, provide a list of such users and how you determine which users are metered and which are not.
2. How do you account for water used by the Utility's water and/or sewer operations (facilities uses, water line flushing, sewer line cleaning, etc.)?
    a. Are any such uses unmetered?
    b. If so, provide a list of such uses and how you determine which are metered and which are not.
3. Do you have any major industrial users in your system and what percentage of the water sold are they purchasing?
    a. Do they have fire lines and are they metered?
4. How do you account for water used by other unmetered users such as the Street / Highway Department, fire departments, etc.?
    a. Provide a list of unmetered users whose consumption you monitor.

Part 2: Apparent Losses

1. Describe your program for inspecting, testing, calibrating and rebuilding / replacing 2-inch and larger water meters.
2. What types of meters (e.g., compound, turbine, etc.) are used for larger customers?
    a. How do you determine which meter is the correct application?
3. How do you ensure that meter bypasses are not opened by the customer?
4. Describe your small meter (< 2-inch) replacement program including the threshold (e.g., age, gallons of water metered, etc.) at which the meter is replaced.
    a. How did you determine the threshold?
5. How did you determine the "Customer metering inaccuracies" in the water audit?
6. Do you have a program to inspect for unauthorized consumption?
    a. What are the consequences if unauthorized consumption is discovered?

Part 3: Real Losses

1. Describe your leak detection program.
2. Do you have or have access to leak detection equipment?
3. Describe the leak detection equipment that your Utility owns and/or rents on a routine basis and how it is employed for detection of leaks.
4. Do you search for leaks at night when there is little traffic or small household usage?
5. Are you performing periodic leak detection surveys with leak detection equipment?
    a. If so, what percentage of the system is sounded each year?
6. Do you use a third-party leak detection firm?
7. Describe your methods for monitoring the water system for leaks.
8. Is your system "zoned" to identify and isolate water loss?
    a. Describe how that has been used to identify potential water loss.
9. Have you established any permanent District Metered Areas to monitor minimum night flows in these discrete zones to identify areas of leakage?
10. Is the cost to repair the leak justified based on the amount of water being lost?
11. How many leaks have been repaired within the past year?
    a. What is the estimated water loss from those leaks?
12. What if any water main maintenance are you performing?
13. Do you have a plan/criteria for replacing water mains?
14. What are the general ages and composition of the mains and services in your system?
15. Are the system valves being exercised and have they all been located for repair emergencies?
16. Do you have tank overflows as a part of the operation of the tanks or are they SCADA controlled?
17. What methods have you implemented for controlling system pressure surges?
18. Are there pressure zones within your system?
    a. Are they based on topography?
19. Are you doing anything to manage the pressure in your system?
20. Do you have any pressure reducing valves within the distribution system?

Part 4: System Data

1. How did you determine average operating pressure of the distribution system for the water audit?

Part 5: Cost Data

1. Do you provide and bill wastewater based on water consumption?
2. Does the customer retail unit cost in the water audit include charges for water and sewer?

Part 6: Policies

1. Do you have a written policy for billing adjustments?
    a. Is the policy followed correctly by all levels of staff?
2. What is your policy for notifying customers they have a leak?
3. Do you have a policy to prosecute for unauthorized consumption such as water theft or meter tampering/damage?
4. Has your utility adopted an overall Non-revenue Water Policy?

Part 7: Education

1. By what means are customers encouraged to report leaks and educated in water loss and its impact on the Utility?
    a. What methods are available to customers for reporting leaks, unauthorized water use, etc.?
2. How have you educated your employees (both Water system and other City / Utility departments) on the impact of non-revenue water on the Utility's operations?
    a. By what means are employees provided to report leaks, unauthorized water use, etc.?
    b. Are there any incentives for the reporting of unauthorized water use?